Economic Impacts of Visitors to Mount Rainier National Park, 2000

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Executive Summary

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Mount Rainier National Park hosted 1.3 million recreation visits in 2000. Park visitors spent $30 million dollars in the local area generating $9 million in direct personal income (wages and salaries) for local residents and supporting 649 jobs in the area. An additional eleven million dollars in sales, 3.9 million in personal income and 163 jobs are generated through secondary effects, as visitor spending circulates through the local economy. Park visitors account for 3.4% of tourism spending in the three county area (Lewis, Pierce and Yakima counties). The tourism sales multiplier for the region is 1.44 indicating that $ .44 in secondary sales is generated for every dollar of direct sales.

Economic impacts are estimated with the updated National Park Service Money Generation Model (Version 2). The MGM2 model uses park visitation data, spending averages from the 2000 Mount Rainier NP Visitor Survey and local economic multipliers to estimate spending, income and jobs attributable to the park. The 1.3 million recreation visits equates to 0.48 million party days/nights in the area (Table E1). The three largest segments in terms of total party-nights are day trips from outside the area[1] (61%), visitors staying overnight in motels outside the park (11%) and local residents (8%). Campers account for about 58,000 party nights split about evenly between stays inside and outside the park. Park visitors account for about 54,000 room nights in motels outside the park and 14,000 room nights inside the park.

Table E1. Mount Rainier NP visits and spending by segment

Lodging segment	Recreation visits (000's)	Party nights (000's)	Average spending (per party night)	Total spending (millions)	Pct of spending
Local day	142	41	30.54	1.2	4%
Non-local day	903	293	41.95	12.3	41%
Motel-In	35	14	259.08	3.5	12%
Camp-In	54	30	41.91	1.3	4%
Back-country	35	20	28.57	0.6	2%
Motel-Out	126	54	164.28	8.8	30%
Camp-Out	51	28	71.20	2.0	7%
Total	1,345	480	62.05	29.8	100%

On average, park visitors spend $62 per party per day in the local area. Spending varies considerably across the seven lodging segments — from a high of $259 per party-night for

[1] Visitors staying with friends and relatives or an owned seasonal home in the area are treated as day visitors

visitors staying in park lodges to $28 dollar per night for backcountry campers. Day visitors from outside the local area contribute 41% of the total park visitor spending, followed by visitors staying at hotels outside the park (30%). The restaurant sector receives 23% of visitor sales, followed by hotels (20%) and retail trade (20%). Recreation admissions/fees and gas/oil each accounts for about 10% of the direct sales impact.

Table E2. Economic Impacts of Mt. Rainer NP Visitor Spending, 2000

Sector/Spending category	Direct Sales $000's	Jobs	Personal Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	5,907	137	1,927	2,928
Camping fees	974	23	318	483
Restaurants & bars	6,772	207	2,306	3,213
Groceries, take-out food/drinks	885	5	103	202
Gas & oil	263	0	11	29
Local transportation	1,889	55	1,070	1,260
Admissions & fees	2,839	89	982	1,607
Souvenirs and other expenses	132	1	27	47
Retail Trade	4,257	124	2,171	3,392
Wholesale Trade	649	8	262	447
Total Direct Effects	**24,567**	**649**	**9,177**	**13,606**
Secondary Effects	10,878	163	3,937	6,784
Total Effects	**35,445**	**812**	**13,114**	**20,390**
Multiplier	1.44	1.25	1.43	1.50

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Introduction

The purpose of this study is to document the local economic impacts of visitors to Mount Rainier National Park (MORA) in 2000. Economic impacts are measured as the direct and secondary sales, income and jobs in the local area resulting from spending by park visitors. The economic estimates are produced using the Money Generation Model 2 (MGM2) (Stynes and Propst, 2000). Three major inputs to the model are:

1) Number of visits broken down into seven lodging-based segments,
2) Spending averages for each segment, and
3) Economic multipliers for the local region.

Inputs are estimated from the Mount Rainier National Park Visitor Survey (Visitor Services project, 2000), the National Park Public Use Statistics, and MGM2 multipliers. The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region.

Mount Rainier National Park and the Region

Mount Rainier National Park was established in 1899 to protect the natural resources of the southwest Cascade Range of Washington State . It is the fifth oldest national park in the US, encompasses 235,625 acres and is located about 100 kilometers (50 miles) southeast of the Seattle-Tacoma metropolitan area, which contains over two million people. The Park is approximately 97 percent wilderness and 3 percent National Historic Landmark District. With the greatest single-peak glacial system in the United States, Mount Rainier is famous for mountain climbing and other recreational activities year round.

Figure 1. Mount Rainier National Park
Source: www.gorp.com

The park is primarily accessed through the East and South region by highway 410, 123 and 706. Two nearby cities, Ashford and Packwood, offer a variety of accommodations and restaurants outside the park. There are two concessioner-operated lodges inside the park. The National Park Inn is open year-round while Paradise Inn is open from May to September. The Park operates six auto campgrounds providing almost 600 sites. Due to high elevations and weather constraints, five campgrounds operate from June to September only.

Total recreation visits to Mount Rainier NP in 2000 was 1.3 million (NPS Public Use Statistics Office, 2001). Concessioners in the park reported 42,932 person nights in lodges and park operated campgrounds generated 93,963 person nights[2] and 58,882 nights of backcountry usage (Table 1). Public Use statistics assume an average party size per vehicle of 2.8 persons from September through May and 3.0 persons from June through August. The majority of the park visits occur from June to September. Seventy percent of recreation visits, 83% of lodging stays, 90% of camping nights and 83% of backcountry permits were generated during these four months in 2000.

Table 1. NPS public use data for Mount Rainier NP, 2000

Month	Recreation visits	Lodging	NPS- Tent	NPS- RV	Misc. campers	Back-country	Total overnight stays
January	28,406	539	468	98	0	895	2,000
February	32,619	643	202	95	0	2,038	2,978
March	23,784	593	109	56	0	1,053	1,811
April	35,744	680	185	109	0	730	1,704
May	81,895	2,517	1,031	591	16	2,997	7,152
June	181,516	7,351	7,446	3,507	31	8,179	26,514
July	276,237	9,914	21,264	8,961	92	14,885	55,116
August	289,775	9,945	26,529	9,597	96	17,764	63,931
September	175,595	8,213	6,804	4,528	303	8,028	27,876
October	117,543	1,195	884	675	0	1,015	3,769
November	68,112	565	101	73	0	164	903
December	33,607	777	62	50	0	1,134	2,023
Total	1,344,833	42,932	65,085	28,340	538	58,882	195,777

Source: NPS Public Use Statistics Office, http://www2.nature.nps.gov/stats/

The Local Region

The park is surrounded by Lewis, Pierce, and Yakima Counties. Populations of the three counties was 978,213 in 1999 with an average income per capita of $23,967. Total personal income was 23.4 billion, and total employment was 475,969 (Bureau of Economic Analysis, 2001). Pierce county, including the cities of Olympic and Tacoma, accounts for 70% of the three-county region's population and 74% of total personal income in the area. The government

[2] Camping nights are the sum of camping activities of RV, tents and miscellaneous.

sector accounts for 27% of all income in the region, followed by services (24%), manufacturing (12%) and retail trade (11%) (Table 2). Three tourism-related sectors account for $500 million personal income and about 33,000 jobs in 1999. Restaurants generated 330 million in personal income, followed by amusements (125 million), and lodging (45 million).

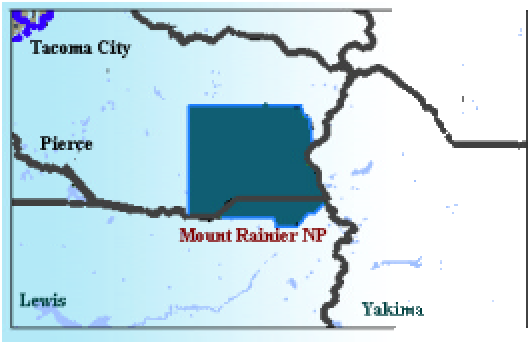

Figure 2. Mount Ranier National Park and surrounding counties

Table 2 . Economic Activity in Mount Rainier NP Region, 1999

Categories	Personal income (million's)	Employment	Pct. of Personal income
Farm earnings	351	21,416	3%
Ag. service, forestry, and other	181	9,962	1%
Mining	10	280	0%
Construction	953	27,730	7%
Manufacturing	1,658	42,251	12%
Transportation and public utilities	686	16,135	5%
Wholesale trade	768	22,111	6%
Retail trade	1,484	81,885	11%
Eating and drinking places	330	11,107	
Finance, insurance, and real estate	726	25,520	5%
Services	3,270	130,347	24%
Hotels and other lodging places	45	18,737	
Amusement and recreation services	125	2,848	
Government	3,688	91,005	27%
Total	13,775	468,642	100%

Source: Bureau of Economic Analysis, REIS, 1999 county data for Lewis, Pierce and Yakima Counties

Dean Runyan Associates. estimated total travel spending to Washington State at $8 billion in fiscal year 1999[3] (Washington State Tourism Industry Resource Center, 2001). Tourism spending in Lewis, Pierce, and Yakima Counties was estimated to be $876 million, yielding $197 million in total earnings[4], 17,030 jobs supported by tourism activities and $73 million of tax revenue in 1999. Around sixty percent of tourism spending occurs in Pierce County. Tourism spending supports 3 to 6 percent of total employment in these three counties.

[3] Not including air transportation.
[4] Total Earnings includes wages and salary, other earned income, and proprietor income.

Mount Rainier National Park Visitor Survey, 2000

A park visitor survey was conducted at Mount Rainier National Park during August 8-27, 2000 by the National Park Service (NPS) Visitor Services Project (VSP). The study measured visitor demographics, trip planning, travel expenditures, personnel service, facility importance and quality ratings A total of 1,043 questionnaires were distributed to randomly selected visitors and 790 were returned for a 75.7% response rate.

Further analysis of the visitor survey dataset was carried out at Michigan State University to identify visitor segments, to estimate spending averages for these segments, and to develop parameters for expanding from the sample to all park visitors.

The sample was gathered at five entrance gates and one information center inside the park [5] during a 20 day period in August. Sampling only in August will bias results toward summer visitor characteristics and use patterns. Generally off-season visitors are more likely to be local residents, are less likely to camp, usually involve smaller parties, and often spend less time and money in the area.

Results were adjusted for the seasonal bias and also to be consistent with official overnight stay figures[6]. A higher percentage of visitors during the summer are camping and lengths of stay and party sizes also vary by season. Average party size and length of stay were adjusted for the seasonal bias by assuming somewhat lower off- season values and taking a weighted average of the summer and off-season estimates. As most sampling was carried out at entrance stations, cases were weighted inversely to the number of park entries on the trip.

MGM2 Visitor Segments

MGM2 divides visitors into segments to help explain differences in spending across distinct user groups. Overnight visitors were distinguished from day visitors based on the lodging type reported in the Mount Rainier visitor study questionnaire. Day visitors were divided into two groups depending on the person's ZIP code to separate local and non- local visitors. Seven lodging segments were established for the Mount Rainier NP visitors:

Local day users: Residents whose ZIP code was 983xx or 98585, 98597, 98533, 98558, 98580 (Within 30 miles of the park)

Non-local day users: Visitors from outside the region, who do not stay overnight in the area. This includes day trips and pass-through travelers. Visitors staying

[5] Questionnaires were distributed proportionally at the following locations: Nisqually Entrance (48%), White River Entrance (19%), Stevens Canyon Entrance (10%), Carbon River Entrance (10%), Mowich Entrance (10%), and Silver Creek Information Station (3%).

[6] If the proportions of visitors staying overnight in the park from the (unadjusted) sample are expanded to all visitors, park overnight stays are three to four times those reported in the public use data.

with friends/relatives or at an owned seasonal home in the area are also treated as day visitors for the purpose of estimating spending.

Motel-In: Visitors staying in lodges or cabins inside the park
Camp-In: Visitors staying in campgrounds inside the park
Backcountry campers: Visitors staying overnight in backcountry sites
Motel-out: visitor staying in motels, cabins, B&B's etc. outside the park within the region
Camp-out: visitors staying in private or other public campgrounds outside the park.

The shares of visits and visitors within each lodging segment were estimated using the Mount Rainier NP visitor survey data, supplemented by the NPS Public Use data. Mount Rainier NP recorded 1.3 million recreation visits in 2000. Local residents account for 11% of the visits; 66% are day trips from outside the region (including stays with friends and relatives or seasonal homes in the area). One in eleven visitors (9%) are staying in area motels.

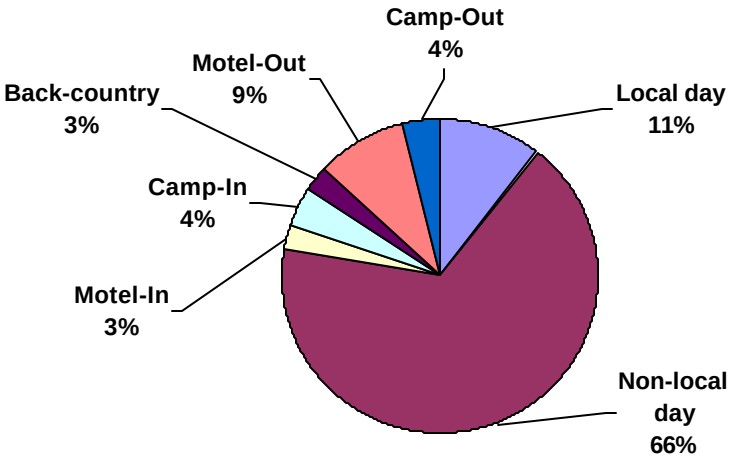

Figure 3. Mt. Rainier NP recreation visits by segments

A recreation visit is the count of one person entering the park. Spending depends on how long a visitor stays in the area rather than how many times they enter the park or how much time they spend in the park. Recreation visits are therefore converted to party days/nights in the region before applying spending averages. This avoids double counting spending of visitors who may enter the park multiple times on the same day and also takes into account additional days a visitor may spend in the area outside the park.

Recreation visits are converted to party nights[7] as follows:

Person trips to the area = recreation visits / number of park entries per trip
Person nights in the area = person trips * length of stay in area
Party nights in the area = person nights / party size

Distinct re-entry rates, party sizes and lengths of stay were estimated for each segment using the visitor survey data (Table 3). The average party size across all visitors was 2.8. Overnight visitors stayed between 1.7 and 2.5 nights[8]. Overnight visitors re-enter the park 1.3 to 1.7 times during their stay. It should be noted that total party nights and spending will be sensitive to the length of stay and re-entry factors. Lengths of stay indicate how many nights of

[7] A party night is a travel group staying one night in the area. The travel group is usually all individuals in the same vehicle or staying in the same room or campsite. For day trips, estimates are in party days.
[8] Stays of more than 7 days and groups of more than 8 people were omitted in computing these averages.

spending will be counted for each visitor. Re-entry factors correct for multiple counting of the same visitors in the Public Use data.

Table 3. Mount Rainier National Park visit conversion parameters by lodging segment

Segment	Local day	Non-local day	Motel-In	Camp-In	Back-country	Motel-Out	Camp-Out	Total
Party size[ab]	3.2	2.8	3.1	3.1	2.9	2.6	3.1	2.8
Length of stay[a]	1.0	1.0	1.7	2.4	2.5	1.9	2.3	1.2
Re-entries[a]	1.1	1.1	1.4	1.4	1.5	1.7	1.3	1.2
Number of cases[c]	52	396	42	116	24	62	14	706

a: Cases were weighted inversely to the re-entry rate.

b: Average party sizes were adjusted for the seasonal bias, assuming an off-season party size of 2.8, the figure used in NPS pubic use statistics for off-season visitor counts.

c: Cases reporting multiple lodging types were allocated to segments based on the types reported, e.g. someone reporting two types of lodging contributed ½ to each type. Cases with missing data and some outliers are omitted.

Using these conversion parameters, 1.3 million recreation visits equates to 1.1 million person-trips, 1.3 million person-nights and 0.48 million party-nights (Table 4). The estimates of person nights inside the park equal park overnight stay figures. Seventy-eight percent of recreation visits are day trips with local residents accounting for 11% and visitors from outside the region 67%. Visitors staying with friends and relatives in the area or an owned seasonal home are treated as non-local day users (around 4%). Area motels account for 14% of party nights (3% inside the park), campgrounds 12% (half inside the park) and backcountry stays represent 4% of party nights. Park visitors accounted for about 54,000 room nights in area motels and about 28,000 campsite nights outside the park in 2000.

Table 4. Visit measures for Mt. Rainier NP by segment, 2000

Segment	Local day	Non-local day	Motel-In	Camp-In	Back-country	Motel-Out	Camp-Out	Total
Visit Measures in 000's								
Recreation visits (person-entries)	142	903	35	54	35	126	51	1,345
Person-trips[a]	130	826	25	39	24	75	39	1,158
Person-nights[b]	130	826	43	94	59	139	89	1,381
Party-nights[c]	41	293	14	30	20	54	28	480
Percents								
Pct of recreation visits	11%	67%	3%	4%	3%	9%	4%	100%
Pct of person-trips	11%	71%	2%	3%	2%	6%	3%	100%
Pct of person-nights	9%	60%	3%	7%	4%	10%	6%	100%
Pct of party-nights	8%	61%	3%	6%	4%	11%	6%	100%

a: Person-trip = recreation visits / re-entry rate

b: Person-night = person-trip * length of stay

c: Party-night = person-night / party size

Visitor spending

Spending averages were estimated from the Mount Rainier NP visitor study. After removing some outliers[9], spending averages were computed on a party trip basis for each segment and then converted to a party night basis by dividing by the average length of stay. The survey covered expenditures that occurred within 30 miles of the park. Spending averages were reduced by 5% across all segments to adjust for the summer-season bias in the sample[10]. Spending averages per party per night by segment are shown in Table 5.

Table 5. Visitor spending[a] by lodging segment in local area ($ per party day)

	(SEGMENT)							
Spending Category	Local day	Non-local day	Motel-In	Camp-In	Back-country	Motel-Out	Camp-Out[b]	Total
Motel, hotel cabin or B&B	-	-	120.44	-	-	79.16	-	12.31
Camping fees	-	-	-	13.94	-	-	19.53	2.03
Restaurants & bars	8.47	10.68	58.60	6.40	5.84	34.68	11.35	14.12
Groceries, take-out food/drinks	5.17	2.82	9.17	6.34	9.09	6.52	8.31	4.43
Gas & oil	8.35	6.08	6.91	6.16	5.67	8.87	10.65	6.87
Local transportation	0.31	3.28	19.47	2.63	0.47	9.79	1.20	3.94
Admissions & fees	4.66	5.91	9.26	2.60	2.52	8.07	8.10	5.92
Souvenirs and other expenses	3.58	13.18	35.23	3.83	4.98	17.18	12.06	12.44
Total	30.54	41.95	259.08	41.91	28.57	164.28	71.20	62.05

a: Results were computed by weighting cases inversely to the re-entry rate, as the sample was biased toward cases with a higher re-entry rate.

b: Original profile was replaced with a generic Camp-Out spending average from the MGM2 Model due to small number of cases sampled in this category.

Local day visitors spent $30 per party per day, while day visitors from outside the local area spent $42 per day. Overnight visitors staying in park lodges or cabins spent $259 per party per night, about $95 dollars more than those staying in motels outside the park. These spending figures correspond to a nightly room rate of $120 inside the park and $80 outside. Campers staying inside the park spent $41 per night, while campers staying outside the park spend $71 per night. Backcountry campers spent around $28.5 dollars per party per night, or about $71 for a two and half night stay.

Total visitor spending is calculated by multiplying the number of party-nights in Table 4 by the spending averages in Table 5. The calculations are carried out segment by segment, summing across the seven segments to obtain the total. Visitors to Mount Rainier NP in 2000 spent $29.7 million in the local area (Table 6). Visitors spent $5.9 million on motel/hotel rooms, $6.7 million on restaurant meals, and $5.9 million on souvenirs. Day visitors from outside the region contributed about 40 percent ($12 million) of the total spending followed by groups staying outside the park in motels (30%), and groups staying inside the park in motels (12%).

[9] Spending outliers are defined as cases with party spending exceeding $1000 per day, or trip spending on any individual category exceeding $1000 (n=16).

[10] We assumed that visitors during the off-season spend 10% less than summer visitors. As about 55% of Mount Rainier NP visitors come in June, July or August, the annual spending averages are reduced by about 5% over the summer averages.

Table 6. Total Spending by Mt. Rainier NP Visitors in 2000 ($000's)

	(Segment)								
Spending category	Local day	Non-local day	Motel-In	Camp-In	Back-country	Motel-Out	Camp-Out	Total	Percent
Motel, hotel cabin or B&B	0	0	1,647	0	0	4,260	0	5,907	20%
Camping fees	0	0	0	422	0	0	553	974	3%
Restaurants & bars	345	3,128	801	194	117	1,867	321	6,772	23%
Groceries, take-out food/drinks	210	827	125	192	183	351	235	2,124	7%
Gas & oil	340	1,780	95	186	114	478	301	3,294	11%
Local transportation	12	961	266	80	9	527	34	1,889	6%
Admissions & fees	190	1,730	127	79	51	434	229	2,839	10%
Souvenirs and other expenses	146	3,861	482	116	100	925	341	5,970	20%
Total	**1,242**	**12,286**	**3,542**	**1,268**	**574**	**8,841**	**2,015**	**29,769**	100%
Percent	4%	41%	12%	4%	2%	30%	7%	100%	

Economic Impacts of Visitor Spending

The $29.7 million spent by Mount Rainier NP visitors had a direct economic impact on the region of $24 million in direct sales, $9 million in personal income (wages and salaries), $13 million in value added, and supported 649 jobs in the region[11] (Table 7). The restaurant sector received the largest amount of direct sales ($6.7 million), followed by lodging ($5.9 million) and retail trade ($4.2 million).

Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. The local region surrounding Mount Rainier NP captures 83% of visitor spending. Seventeen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors[12].

The sales multiplier for the region is 1.44, meaning that an additional $0.44 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects generate an additional 163 jobs, about $3.9 million in personal income and $6.7 million in value added.

[11] A "small metro" generic multiplier is selected from the MGM2 model to present the local economic ratios. The profile is applicable to region with population between 30,000 and 500,000.

[12] For example, if a visitor buys $50 dollars worth of clothing at a local store, the store receives the retail margin (assume $20 dollars), the wholesaler or shipper (if local) may receive $5 dollars, and the remaining producer price of the clothing ($25 dollars) leaks immediately outside the local economy, unless the clothing is manufactured in the local region.

Table 7. Economic Impacts of Mt. Rainier NP Visitor Spending, 2000

Sector/Spending category	Direct Sales $000's	Jobs	Personal Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	5,907	137	1,927	2,928
Camping fees	974	23	318	483
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Total Effects	**35,445**	**812**	**13,114**	**20,390**
Multiplier	1.44	1.25	1.43	1.50

Study Limitations and Error

The accuracy of the MGM2 estimates rests on the three inputs: visits, spending averages, and multipliers. The number and kinds of visitors is likely the largest potential source of error. Spending calculations require estimates of visits in person or party nights in the area, so park re-entry estimates and length of stay parameters are critical. Visitors may not accurately report re-entries and the visitor estimates may not exactly coincide with park visitor counting procedures.

Sampling visitors at entrances during the peak use season introduces unknown biases in the distribution of visitors across lodging segments. Adjustments have been made to attempt to reduce these biases, but there are no independent figures to readily estimate the shares of visitors staying overnight outside the park. The direct estimates from the VSP study of the shares of visitors staying overnight inside the park were three to four times the corresponding estimates using park overnight stay data.

The sampling errors on the average per night spending estimates are 6% overall and range from 9-40% for individual segments[13] (95% confidence interval). Spending averages can also vary by about 10% based on decisions to treat missing spending data as zeros or not, and how many and which outliers to delete. Our analysis generally took a conservative approach (i.e.,

[13] Sampling errors depend on sample size and variation in the study population. The segmented approach reduces variations within the visitor subgroups. Larger sampling errors are for three segments with fewer than 50 cases (backcountry, camp-out and motel-in).

yielding lower averages). Based on sampling errors in the spending averages, total visitor spending ranges from $28 - $31.6 million.

The multipliers and economic ratios used to convert spending to jobs and income and to estimate secondary effects come from a generic profile developed for " small metro" regions from the MGM2 model. Multipliers largely influence the estimates of secondary effects.

Depending on the direction and magnitude of errors in visits, spending, and multipliers, the different errors may compound or cancel each other. The most important potential errors are in the estimates of visits, length of stay in the area, and re-entries. As the model is linear, doubling visitors will double spending and impacts. Errors in re-entry estimates or lengths of stay directly translate into errors in party nights, which is multiplied by the spending averages.

In addition to these statistical issues, there are also conceptual issues regarding how much and which spending may be claimed by the park. Around 79% of park visitors indicated that visiting Mount Rainier NP was the primary reason for the trip. Eight percent of those sampled were visiting friends and relatives, 7% came for other attractions and 4% were on business trips (Visitor Service Project, 2000). For those visiting friends and relatives, we have only counted one day of spending for each day they visit the park. Those with seasonal homes in the area were treated similarly.

Local visitors are usually excluded in estimating economic impacts, but have been included here. Since they are a distinct segment, their contribution to the totals is readily estimated and subtracted from the totals, as desired. Locals only account for about $1.2 million of the $29.7 million in spending.

Summary and Discussion

Visitors to Mount Rainier NP spent $29.8 million within a 30 mile radius of the park in 2000. The total economic impact of visitor spending was $24 million in direct sales, $9 million in personal income, $13 million in direct value added and 649 jobs. With multiplier effects, created by the re-circulation of the money spent by tourists, visitor spending generated about $35 million in local sales, and an associated $13 million in personal income, $20 million in value added and 812 jobs. These figures do not include park admission fees or the impacts of the NPS payroll and operations in the area. Sectors receiving the greatest benefit from park visitors are restaurant ($6.7 million in direct sales), lodging ($5.9 million), and retail trade ($4.2 million).

The park's relative importance to the local economy can be identified by comparing these figures with local tourism and economic statistics. For example, total hotel sales in Lewis, Pierce and Yakima County was $175 million in 2000 (Department of Revenue, State of Washington, 2001). All tourist spending in the region in 1999 was estimated at $876 million (Washington State Tourism Industry Resource Center, 2001). Park visitors therefore account for 4% of hotel sales in the region and 3.4% of all tourist spending in the region. If increased economic impact is a goal, management strategies that motivate park visitors to stay overnight in the area or to extend lengths of stay should be encouraged.

The total impacts are useful for garnering park support and explaining the role of the park in the region's economy. The MGM2 model results can also be used to evaluate alternative management, development and marketing decisions. The marginal economic impacts of particular visitor segments are useful for evaluating particular actions. Table 8 shows the changes in sales, jobs, income and valued added associated with an increase or decrease of one thousand additional party-nights by each segment.

To evaluate the regional economic impacts of adding, for example, an additional 10 rooms to a park lodge, first compute the change in party nights – 10 rooms occupied 100 nights yields 1,000 extra party nights. Applying the marginal impacts for the "Motel- in" segment in Table 8, the additional rooms generate the following direct effects : $237,000 dollars in direct sales in the region, $86,000 in personal income, $126,000 in value added and 6 jobs. The impact of this alternative could be compared to others, such as expanding campsites, a marketing campaign to increase day trips, etc.

Table 8. Direct impacts of an additional 1,000 party nights by lodging segment, Mount Rainier NP, 2000

Segments	Direct Sales ($000's)	Personal Income ($000's)	Value Added ($000's)	Jobs
	(Marginal Impacts per 1,000 party-nights)			
Local day user	22.2	7.9	12.0	0.6
Non-local day user	31.7	12.7	18.8	0.9
Motel-In	237.4	86.3	126.1	6.1
Camp-In	34.6	12.3	18.4	0.8
Back-country	20.4	7.2	11.1	0.5
Motel-Out	149.6	53.4	78.6	3.8
Camp-Out	57.0	20.3	31.0	1.4

The economic impacts presented in the report document the economic significance of 1.3 million recreation visits to Mount Rainier NP in 2000. The impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, and other changes in the park and surrounding communities. The MGM2 model has built-in procedures to price adjust spending averages over time, so updated figures may be obtained fairly easily, if there are not significant changes in visitor use and spending patterns. In the absence of significant structural changes in the local economy, multipliers will be quite stable. So the primary input for updating the estimates are visit estimates, which must take into account any changes in the mix of visitors or their length of stay in the area.

Suggested research to further refine the spending and impact estimates would include (1) a survey of off-season park visitors to refine the segment share, party size and re-entry rates, (2) general surveys of visitors to the region in cooperation with local tourism organizations to understand the share of visitors staying overnight outside the park, and (3) additional comparisons of park visitor characteristics, spending and impacts with other secondary sources

of tourism activity in the region such as the Dean Runyon study, local room taxes and occupancy rates, and other local economic statistics.

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Appendix A: Definition of Terms in the MGM2 Model

Terms	Definition
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in their region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions.
Personal income	Wage and salary income, proprietor's income and employee benefits.
Value added	Personal income plus rents and profits and direct business taxes. As the name implies, it is the value added by the region to the final good or service being produced. It can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects capture the sum of indirect and induced effects.
Indirect effects	Changes in sales, income and jobs from industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. ▪ Direct effects accrue largely to tourism-related business in the area ▪ Indirect effects accrue to a broader set of economic sectors that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of economic sectors.
Marginal impacts	Economic impacts created per additional visitor or dollar spent.